



SECTION 1002

AGGREGATE FOR ASPHALTIC CONCRETE

1002.1 Coarse Aggregate.

1002.1.1 All coarse aggregate shall consist of sound, durable rock, free from cemented lumps or objectionable coatings. When tested in accordance with AASHTO T 96, the percentage of wear shall not exceed 50. The percentage of deleterious substances shall not exceed the following values and the sum of percentages of all deleterious substances shall not exceed 8.0 percent.

Percent by Weight (Mass)	
Deleterious Rock	8.0
Shale	1.0
Other Foreign Material	0.5

The requirements of this section apply to each size or fraction of aggregate produced.

1002.1.1.1 At least 60 percent of the particles retained on a No. 4 (4.75 mm) sieve, for use in bituminous mixtures meeting [Sec 403](#) requirements, shall have two or more mechanically induced faces.

1002.1.1.2 If a density requirement is specified for asphaltic concrete, the total quantity of chert in each size or fraction of produced crushed stone aggregate, including that permitted as deleterious, shall not vary more than 10 percentage points from the quantity present in the aggregates used in the approved laboratory job mixtures.

1002.1.2 Crushed stone shall be obtained from rock of uniform quality. Rock tested from individual ledges for preliminary source approval shall meet the following criteria.

Los Angeles Abrasion, AASHTO T 96, percent loss, max	50
Absorption, AASHTO 85, percent, max	4.0

1002.1.3 Gravel shall meet the following criteria for preliminary or final approval.

Los Angeles Abrasion, AASHTO T 96, percent loss, max	50
Absorption, AASHTO 85, percent, max	5.5

1002.1.3.1 Gravel aggregate shall be washed sufficiently to remove any objectionable coating. Gravel aggregate for use in bituminous mixtures meeting [Sec 403](#) requirements shall be crushed from gravel that has no more than 10 percent passing the maximum sieve size for the mixture in which the aggregate is intended. Crushed gravel shall comply with the requirements for mechanically induced faces in [Sec 1002.1.1.1](#).

1002.1.4 Pile-run chat will not be approved for use in asphaltic concrete unless the chat has been conditioned to meet a specific gradation. A tolerance not to exceed 7 percent on each sieve fraction will be permitted provided the aggregate complies with other provisions of this specification.

1002.1.5 Coarse aggregate for Type I-B asphaltic concrete mixtures shall be furnished and stockpiled in two or more separate sizes or fractions. One fraction shall consist of material retained on the 1/2-inch (12.5 mm) sieve, and the other fractions shall consist of material passing the 1/2-inch (12.5 mm) sieve. A tolerance not to exceed 25 percent may be permitted on the 1/2-inch (12.5 mm) sieve for each fraction.

1002.1.6 Crushed porphyry aggregate meeting the approval of the engineer shall be a uniform product, furnished in one or more fractions. The total crushed porphyry aggregate shall be uniformly graded and shall have material passing each sieve from the maximum size aggregate through the No. 200 (75 μ m) sieve. Total aggregate gradations consisting of essentially one size aggregate will not be permitted.

1002.1.7 Crushed steel slag aggregate meeting the approval of the engineer shall be a uniform product, furnished in one or more fractions. Steel slag consisting principally of a fused mixture of oxides and silicates is a synthetic aggregate produced as a by-product of basic oxygen, electric or open hearth steel making furnaces. The steel slag shall be aged at least three months after crushing and screening. Material that is screened after the steel slag has been crushed, initially and aged three months will not be required to receive additional aging. Steel slag from one source shall not be mixed with or used with steel slag from a different source. The total crushed steel slag aggregate shall be uniformly graded and shall have material passing each sieve from the maximum size aggregate through the No. 200 (75 μ m) sieve. Total aggregate gradations consisting of essentially one size aggregate will not be permitted.

1002.1.8 The gradation of coarse aggregate shall be such that the combinations of coarse aggregate fractions, when combined with fine aggregate, will meet the gradation requirements for the type of asphaltic concrete specified. All fractions of coarse aggregate shall comply with the following requirements, with the exception of crushed porphyry and crushed steel slag. The maximum size of each fraction is defined by the smallest sieve through which 100 percent will pass:

Maximum Size of Fraction	Maximum Percent Passing	
	No. 8 (2.36 mm) Sieve	No. 200 (75 μ m) Sieve
1 inch (25.0 mm)	2.0
3/4 inch (19.0 mm)	12.0	3.5
1/2 inch (12.5 mm)	12.0	3.5
3/8 inch (9.5 mm) or smaller	14.0	4.0

1002.2 Fine Aggregate.

1002.2.1 Fine aggregate for asphaltic concrete shall be a fine, granular material naturally produced by the disintegration of rock of a siliceous nature and/or manufactured by the mechanical reduction of sound durable rock with a percentage of wear not exceeding 50 when tested in accordance with AASHTO T 96. With written approval of the engineer and compliance with this specification, chat sand produced from flint chat in the Joplin area, dolomite chat as produced in the southeast lead belt area or fines manufactured from igneous rock and chert gravel or wet bottom boiler slag may be used as fine aggregate for asphaltic concrete. Fine aggregate shall be free from cemented or conglomerated lumps and shall not have any coating or injurious material. The fraction passing a No. 40 (425 μ m) sieve shall be non-plastic. The percentage of deleterious substances shall not exceed the following values:

Item	Percent by Weight (Mass)
Clay lumps and shale	1.0
Total lightweight (low mass density) particles, including coal and lignite	0.5
Other deleterious substances	0.1

Lightweight (Low mass density) sand particles are not considered deleterious lightweight (low mass density) particles. The total lightweight (low mass density) particles requirement shall not apply to wet bottom boiler slag, angular chert sand or manufactured sand.

1002.2.2 Natural aggregate delivered to the cold bin shall be furnished in one fraction and shall meet the following gradation requirements. If the material is produced by use of two or more fractions, they shall be thoroughly blended at the site of original mixing to form a single material of uniform gradation. Further, if the blending is performed at the job site, it shall be done a sufficient distance from the cold feed bins so that the blended stockpile of fine aggregate will be moved at least once before being fed into the cold bin.

Sieve Size	Percent Passing by Weight (Mass)
3/8 inch (9.5 mm)	100
No. 200 (75 μ m)	0-6

1002.2.3 Fine aggregate manufactured by the mechanical reduction of sound durable rock shall be delivered to the cold feed in one fraction, separate from any natural fine aggregate and shall meet the following gradation requirements.

Sieve Size	Percent Passing by Weight (Mass)
3/8 inch (9.5 mm)	100
No. 4 (4.75 mm)	85-100
No. 200 (75 μ m)	0-8

1002.3 Mineral Filler. Mineral filler shall consist of limestone dust, portland cement or other suitable mineral matter. Mineral filler shall be thoroughly dry and free of lumps consisting of aggregations of fine particles. When tested in accordance with AASHTO T 37 the mineral filler shall conform to the following gradation requirements:

Sieve Size	Percent Passing by Weight (Mass)
No. 30 (600 μ m)	100
No. 50 (300 μ m)	95-100
No. 100 (150 μ m)	90-100
No. 200 (75 μ m)	70-100

1002.4 Hydrated Lime. Hydrated lime shall be thoroughly dry and free of lumps. It shall comply with AASHTO M 303, Type I or II, except the gradation shall be determined in accordance with AASHTO T 37.